

CLAIMS

1. A radio receiving apparatus comprising:
a first calculation section for calculating reception weighting factors with respect to received
5 signals received by the respective antenna element composing an adaptive array antenna;
an arrival direction estimation section for estimating directions of arrival of said received signals;
10 a second calculation section for calculating weighting factors for a replica signal generation in accordance with said reception weighting factors and said directions of arrival;
a replica signal generator for generating replica signals of each of said received signals using said weighting factors for a replica signal generation; and
15 an eliminator for eliminating said replica signals from said received signals.
- 20 2. The radio receiving apparatus according to claim 1, wherein
said first calculation section calculates reception weighting factors by which a radiation pattern is formed in such a way that a null point
25 is directed to a direction where an interference signal source exists.

3. The radio receiving apparatus according to
claim 1, comprising

a plurality of processors each having said first
5 calculation section, said arrival direction
estimation section, and said eliminator, as a
multistage.

4. The radio receiving apparatus according to
10 claim 3, wherein

in the processor of a latter stage,
said first calculation section calculates the
reception weighting factors with respect to the
signals obtained by eliminating the replica signals
15 from the received signals by said eliminator in a
preceding stage, whereby updating the reception
weighting factors sequentially.

5. The radio receiving apparatus according to
20 claim 3, wherein

in the processor of a latter stage,
said arrival direction estimation section
estimates the directions of arrival of the signals
obtained by eliminating the replica signals from the
25 received signals by said eliminator in a preceding
stage.

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6. The radio receiving apparatus according to
claim 5, wherein

in the processor of a latter stage,
said arrival direction estimation section
5 estimates the directions of arrival using an average
value of calculated steering vectors in a given
interval.

7. A mobile station apparatus having a radio
10 receiving apparatus thereon, said radio receiving
apparatus comprising:

a first calculation section for calculating
reception weighting factors with respect to received
signals received by the respective antenna element
15 composing an adaptive array antenna;

an arrival direction estimation section for
estimating directions of arrival of said received
signals;

a second calculation section for calculating
20 weighting factors for a replica signal generation
in accordance with said reception weighting factors
and said directions of arrival;

a replica signal generator for generating
replica signals of each of said received signals
25 using said weighting factors for a replica signal
generation; and

an eliminator for eliminating said replica

signals from said received signals.

8. A base station apparatus having a radio receiving apparatus thereon, said radio receiving apparatus comprising:

a first calculation section for calculating reception weighting factors with respect to received signals received by the respective antenna element composing an adaptive array antenna;

10 an arrival direction estimation section for estimating directions of arrival of said received signals;

15 a second calculation section for calculating weighting factors for a replica signal generation in accordance with said reception weighting factors and said directions of arrival;

20 a replica signal generator for generating replica signals of each of said received signals using said weighting factors for a replica signal generation; and

25 an eliminator for eliminating said replica signals from said received signals.

9. A radio receiving method comprising the steps
of:

calculating reception weighting factors with respect to received signals received by the

respective antenna element composing an adaptive array antenna;

estimating directions of arrival of said received signals;

5 calculating weighting factors for a replica signal generation in accordance with said reception weighting factors and said directions of arrival;

generating replica signals of each of said received signals using said weighting factors for a replica signal generation; and

10 eliminating said replica signals from said received signals.